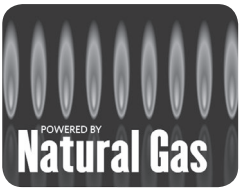
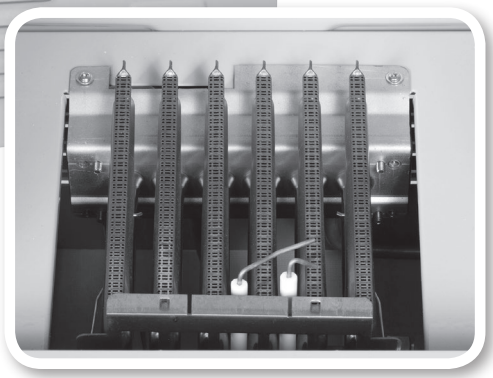
ICG-30 | Intelligent CO2 Generator





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SANTA ROSA, CALIFORNIA GPS

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ICG-30 LP / ICG-30 NG INSTRUCTIONS

Important Warnings and Cautions

Read all instructions before installation and usage.
Save these instructions.

- For safety, it is recommended to always use a Sentinel Co2 monitor/controller with the unit to measure current Co2 gas levels in the environment. Levels over 2,000PPM should be avoided.
- Mount unit securely in a hanging position using the hardware provided. Maintain a minimum of 20" of clearance on all sides of the unit. DO NOT PLACE UNIT ON GROUND / TABLE ETC.
- NG/LP gases are dangerous – Check all fittings by spraying with soapy water before operating unit
- If gas is smelled, immediately unplug unit and ventilate the area. Check all connections again.
- Always disconnect power to the unit before using foggers or bug bombs.
- Unit gets extremely hot when in operation. To prevent burns, do not touch the unit. Do not allow flammable objects to come into contact with the unit.
- This unit shall not be exposed to dripping, splashing or spraying of liquids. Protect unit from vapors, foggers etc.
- Clean unit with clean dry cloth, no oils or solvents
- Do not put paperclips, tools etc inside unit openings or receptacles. Possible fire, shock or death may occur.
- Verify power source prior to connecting unit to power source and/or CO2 controller or timer
- Use only Sentinel supplied power supply to operate the unit. Use of any other power supply will void warranty, and could cause a possible safety hazard.
- Protect any power cords from being walked on, pinched or crushed
- Protect any gas supply hoses from being walked on, pinched or crushed
- All brass fittings are flare fittings and self-sealing. Do not use Teflon tape on gas connections.
- Unit is to be used within defined environmental parameters
- Use caution when operating in high humidity environments
- This unit contains no user-serviceable parts. Do not attempt to service this product. Breaking any warranty seal will void warranty.

WARNING: Installation and connection of gas lines must be in compliance with local and national building codes.

ICG-30 LP AND ICG-30 NG INTRODUCTION

Sentinel Intelligent Carbon Dioxide Generator

There are two different ICG-30 units, one is used for Propane (ICG-30LP) and one is used for Natural Gas (ICG-30NG).

Below are the differences between the two units. Make sure you have selected the correct unit and are using the matching fuel supply.

ICG-30LP: Liquid Propane, otherwise known as LP or Propane, is stored in pressurized tanks of varying sizes. The gas exiting the pressurized tank must first be regulated to a very low pressure before it enters the ICG-30. The standard for measuring the low pressure is inches of water column or Inch /WC. The ICG-30LP operates at 11" WC, or about 1/2 PSI (2.8 kPa). The LP regulator provided with the unit MUST be used unless it is verified that the propane gas supply is already regulated to 11" WC. The provided LP regulator is designed to connect directly to portable LP tanks. It also has a built-in safety function that limits the flow of gas to a very low level in the event of a large gas leak.

Once the LP gas is regulated down to the correct pressure, it enters the unit and flows through solenoid valves and the proprietary Sentinel stainless steel burner assembly. The Sentinel burner assembly is designed to be the most efficient, cleanest burning CO2 generator available to today's gardeners. It is the ONLY CO2 generator burner we are aware of with a low NOX design. The 3 stage design allows the ICG-30LP to have a Co2 output of 10.6, 21.2 and 31.8 cu ft / hour. These modes will create 9,000 , 18,000 and 27,000 BTU / hr or heat, and a large amount of water vapor.

ICG-30NG: Natural Gas, otherwise known as NG, is piped directly into homes and businesses from an extensive pipeline system. The gas supply entering the building can vary from very low pressure (less than 1/4 PSI) to over 5 PSI. The NG provided to the ICG-30NG must first be regulated to a very low pressure before it enters the unit. The standard for measuring the low pressure is inches of water column or Inch /WC. The ICG-30NG operates at 4.5" WC, or about 1/4 PSI (1.15 kPa). The NG regulator provided with the unit MUST be used unless it is verified that the natural gas supply is already regulated to 4.5" WC.

Once the NG gas is regulated down to the correct pressure, it enters the unit and flows through the solenoid valves and the proprietary Sentinel stainless steel burner assembly. The Sentinel burner assembly is designed to be the most efficient, cleanest burning CO2 generator available to today's gardeners. It is the ONLY CO2 generator burner we are aware of with a low NOX design. The 3 stage design allows the ICG-30NG to have a Co2 output of 9, 18 and 27 cu ft / hour. These modes will create 9,000 , 18,000 and 27,000 BTU / hr or heat, and a large amount of water vapor.

ANY QUESTIONS...
Consult a licensed installer or contact Sentinel technical support

INITIAL INSTALLATION INSTRUCTIONS

1. The ICG-30 LP/NG is designed to hang from a ceiling joist or overhead support. It comes with two eyebolts, hooks and sections of chain.
2. DO NOT place the ICG-30 LP/NG on top of something like a table to operate it. The generator requires a free flow of air coming in through the bottom of the enclosure.
3. The chains provided are 20" long. A minimum of 20" must be maintained between the ICG-30 LP/NG and any walls or other obstructions. Take care to mount away from flammable materials.
4. Install the two screw hooks into a suitable supports. The chains are then secured to the ICG-30 LP/NG and the screw hooks with the included S hooks.
5. Ensure that the unit is hanging level. The ICG-30 LP/NG is designed with an anti-tip over safety feature. In the event that the ICG-30 LP/NG is not level or tips over, the gas supply and ignition are disabled.
6. The gas connection fittings must be tightened properly. The supplied 12 foot (4m) hose is connected from the flare fitting on the ICG-30 LP / NG to the provided appropriate gas regulator. The flare fitting is located on the bottom of the ICG-30 LP/NG. Secure the connection with two wrenches.

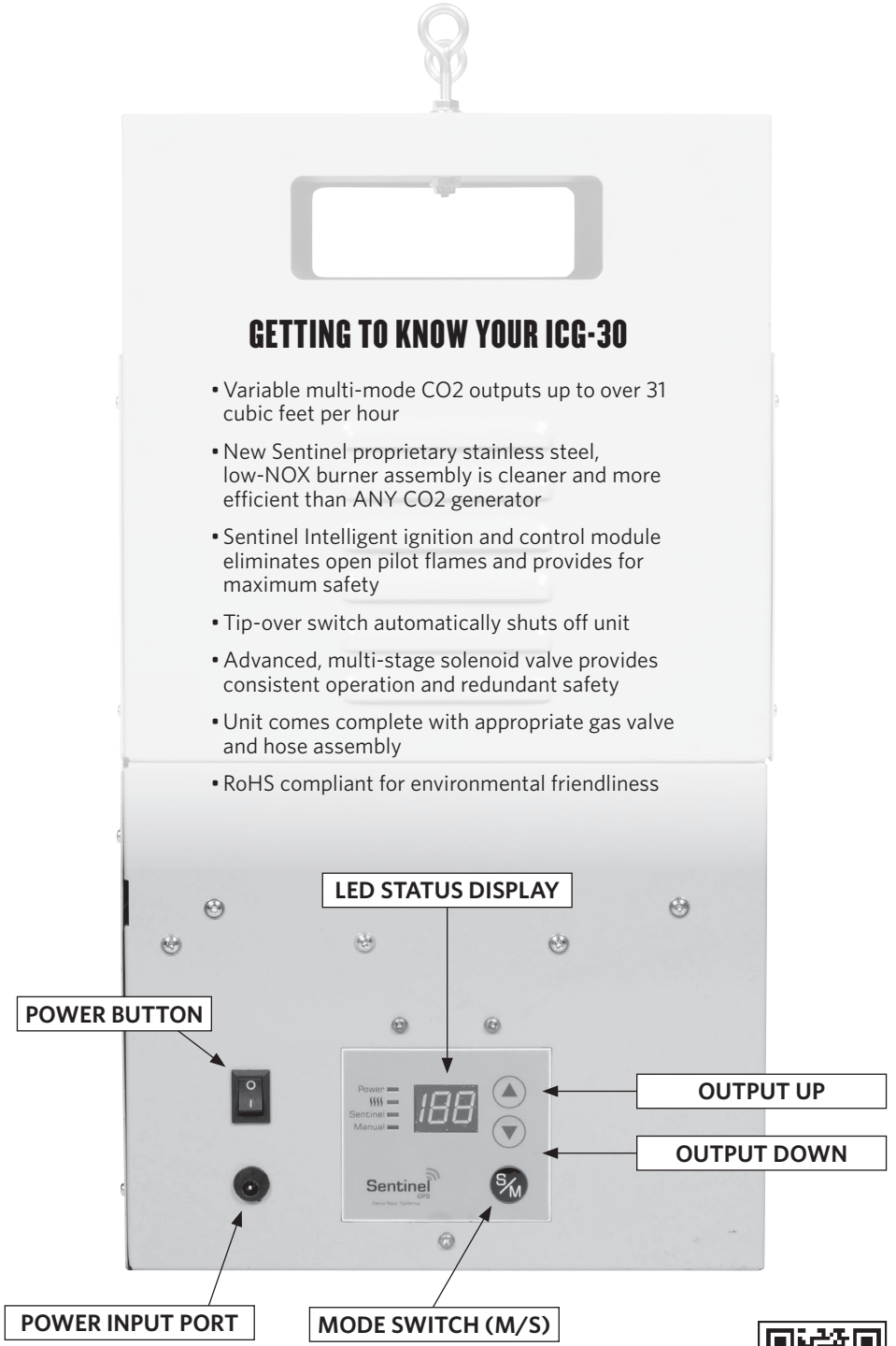
Take care when attaching and tightening the brass flare fittings. All ICG-30 LP/NG units are checked and certified from the factory to not have cross-threaded or stripped fittings. Cross threaded or stripped fittings ARE NOT covered under Sentinel warranty terms.

The brass flare connection underneath the ICG-30 can be difficult to get to. Please be patient. It has been designed this way to protect the fitting inside the steel case during shipping from the factory, and moving around in the grow room, greenhouse or garden during cleaning and maintenance.

7. Once the gas connections are secured, pressurize the gas line and check for leaks using the soapy water. Spray the water onto the gas connection fittings and look for any bubbles. Re-secure if necessary.
8. After the ICG-30 has been hung properly, and gas connections have been checked, test fire the unit. Plug the low voltage connection of supplied 24v power adaptor into the ICG-30, and plug the high voltage connection into any NEMA 5-15 120v / 60Hz receptacle. Switch the power button to the ON position. Press the mode button (M/S) until the "M" (Manual mode) is displayed on the ICG-30 status screen. The ICG-30 will turn on and ignite the burner. Note: Sometimes during initial installation (and subsequent LP tank changes) several attempts are need to ignite the ICG-30 due to air being purged out of the gas lines. This is normal.
9. Once the ICG-30 is operating properly, press the output buttons up or down to cycle through the different output settings. It is normal for 5-10 seconds to take place between output changes. Note how the burner pattern changes during the different output modes.
10. If everything is operating properly, switch off the power button and proceed to "Operating Instructions".

GETTING TO KNOW YOUR ICG-30

- Variable multi-mode CO2 outputs up to over 31 cubic feet per hour
- New Sentinel proprietary stainless steel, low-NOX burner assembly is cleaner and more efficient than ANY CO2 generator
- Sentinel Intelligent ignition and control module eliminates open pilot flames and provides for maximum safety
- Tip-over switch automatically shuts off unit
- Advanced, multi-stage solenoid valve provides consistent operation and redundant safety
- Unit comes complete with appropriate gas valve and hose assembly
- RoHS compliant for environmental friendliness



Scan this code to learn more about the Sentinel ICG-30 on your smart phone!

OPERATING INSTRUCTIONS

A. Operation in the S.I.C.E. (Sentinel Intelligent CO2 Enrichment ™) mode

Your new ICG-30 series generator is the most advanced CO2 generator available on the market today. It incorporates the proprietary S.I.C.E. – Sentinel Intelligent CO2 Enrichment – communication and control components and programming that are unique to Sentinel. This patent pending system allows for communications between Sentinel S.I.C.E series products, providing a level of control never before seen in your greenhouse, garden or grow room.

The system works by a Sentinel S.I.C.E. series controller, such as the Sentinel CPPM-4i or Sentinel CHHC-4i, measuring and monitoring your growing environment. As the atmospheric CO2 levels change, the controller will tell the ICG series generator to increase output, decrease output, or go into idle mode...all computer controlled. In this way, a growing environment that has very low Co2 levels, such as the start of the day or after a ventilation cycle, can be rapidly brought back up to optimal growing conditions. As the optimal conditions are reached, the S.I.C.E. system can decrease Co2 output, making sure that the user defined optimal level is not overshot. As needed, the growing environment can be "topped off" with CO2 enrichment on a lower output setting, allowing for air conditioners and dehumidifiers to better deal with the heat and moisture loads associated with Co2 enrichment and maintaining more steady temperature and rH levels.

1. Follow the Initial Installation Instructions for your ICG series generator, and your S.I.C.E. Series Co2 controller.
2. Plug the ICG-30 power supply into an electrical outlet that will always be energized. DO NOT plug the power supply for the ICG-30 into the CO2 controller.
3. Turn the power switch for the ICG-30 to the ON position.
4. Press the MODE button (S/M) until "S" shows on the ICG-30 LED system status screen.
5. Turn the power switch to the OFF position.
6. Connect the appropriate Sentinel S.I.C.E. shielded communication cable between the ICG-30 and the Sentinel S.I.C.E. CO2 controller.

S.I.C.E. shielded communications cables are available from your preferred retailer, or from **www.growgps.com/store**. Sentinel S.I.C.E shielded communications cables are available in 5 meter (part# SICEcbl5), 10 meter (part# SICEcbl10), 25 meter (part# SICEcbl25), and 50 meter (part# SICEcbl50) lengths.

These are **NOT** standard Ethernet cables. They are shielded to reduce interference coming from digital ballasts, and are specially coated to not allow moisture inside. The use of standard Ethernet cables in **NOT** recommended, and any harm that comes from the use of non-Sentinel approved cables **VOIDS** any and all warranties.

OPERATING INSTRUCTIONS (continued)

The special coatings on these cables makes them less-flexible than standard Ethernet cables. They are not intended to be highly flexible. It is recommended after installation that the cables are affixed securely to the walls or ceilings of your greenhouse or grow room in a manner that makes sure the cables are not pinched or crushed.

7. Set the Sentinel S.I.C.E series CO2 controller to the preferred levels using the "Sentinel Intelligence" setting as outlined in the user manual of the S.I.C.E. series controller.
8. Turn the power switch to the ON position.
9. Enjoy the most advanced CO2 enrichment operation available!

B. Operation in the manual setting enrichment mode

While the ICG-30 series CO2 generators have been designed with advanced communication and control componentry for ideal operation using the proprietary S.I.C.E. system, the ICG-30 can work with any previous Sentinel brand CO2 controllers as well as other manufacturer offerings. And the best part is you can always upgrade to a Sentinel S.I.C.E. series controller in the future!

1. Follow the Initial Installation Instructions for your ICG series generator and the appropriate instructions for your existing CO2 controller.
2. Plug the ICG-30 power supply into the appropriate CO2 controller receptacle.
3. Turn the power switch for the ICG-30 to the ON position.
4. Press the MODE button (S/M) until "M" shows on the ICG-30 LED display screen.
5. Press the output buttons (↑ or ↓) to select between output setting #1, #2, or #3 as shown on the ICG-30 LED system status screen.

As a very basic starting point, growing environments under $3{,}000^3$ feet should be set to output level 1, growing environments from $3{,}000^3$ to $7{,}500^3$ feet should be set to output level #2, and from $7{,}500^3$ feet and larger set to output level 3.

If it is taking too long to reach your desired set point, consider using the next higher setting. If you are consistently over-shooting your desired set point, consider using the next lower setting.

Remember, the most precise control available is obtained using a Sentinel S.I.C.E. series CO2 controller in conjunction with the ICG-30 series generator.

Sentinel GPS Inc. is dedicated to producing environmentally sustainable products. The enclosed product complies with RoHS Directive (2002/95/EC) that restricts the use of 6 hazardous substances such as mercury, cadmium and lead.

Support:

www.growgps.com/support | support@growgps.com

Specifications:	**ICG-30 LP** **(Liquefied Propane)**	**ICG-30 NG** **(Natural Gas)**
CO2 Cu Ft/Hour Output Mode 1	10.6	9
CO2 Cu Ft/Hour Output Mode 2	21.2	18
CO2 Cu Ft/Hour Output Mode 3	31.8	27
Burner Output BTU/HR (kw) Mode1	9,000 BTU (2.6 kw)	9,000 BTU (2.6 kw)
Burner Output BTU/HR (kw) Mode2	18,000 BTU (5.3 kw)	18,000 BTU (5.3 kw)
Burner Output BTU/HR (kw) Mode3	27,000 BTU (7.9 kw)	27,000 BTU (7.9 kw)
Gas pressure	11"WC (2.8 kpa)	4.5"WC (1.15 kpa)
Dimensions	15.7"(40cm) x 9.8" (25cm) x 19.7(50cm)	15.7"(40cm) x 9.8" (25cm) x 19.7(50cm)
Weight	25.1 lbs.(11.4 kg)	24.7 lbs.(11.2kg)
Voltage Requirements	24V DC <500mA max / <40mA Standby	24V DC <500mA max / <40mA Standby

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